CLAIMS

1. An information recording medium in a disc shape, comprising:

a first recording layer having (I) a first test writing area to test-write therein first test-write information for calibration of laser light for recording, along a first track path directed from an inner circumferential side to an outer circumferential side of said information recording medium, by irradiating the laser light thereto, and (II) a first recording area to record therein first record information along the first track path, by irradiating the laser light thereto, in this order from the inner circumferential side; and

a second recording layer, located on a rear of said first recording layer as viewed from an irradiation side of the laser light and having (I) a second test writing area to test-write therein second test-write information for calibration of the laser light, along a second track path directed from the outer circumferential side to the inner circumferential side, by irradiating the laser light thereto, and (II) a second recording area to record therein second record information along the second track path, by irradiating the laser light thereto, in this order from the inner circumferential side.

2. The information recording medium according to claim 1, wherein

in the first recording area, first address information which indicates addresses sequentially given from the inner circumferential side to the outer circumferential side, is recorded in advance along the first track path, and

in the second recording area, second address information which indicates addresses sequentially given from the outer circumferential side to the inner circumferential side, is recorded in advance along the second track

path.

3. The information recording medium according to claim 1, wherein

in the first test writing area, an area portion of a predetermined size is used in order of the outer circumferential side to the inner circumferential side in each operation of writing the first test-write information, and

in the second test writing area, an area portion of a predetermined size is used in order of the inner circumferential side to the outer circumferential side in each operation of writing the second test-write information.

4. The information recording medium according to claim 1, wherein

said first recording layer further has a first control information area in which first control information for controlling at least one of a recording operation and a reproduction operation of the first record information is recorded, on the outer circumferential side of the first test writing area and on the inner circumferential side of the first recording area, and

said second recording layer further has a second control information area in which second control information for controlling at least one of a recording operation and a reproduction operation of the second record information is recorded, on the outer circumferential side of the second test writing area and on the inner circumferential side of the second recording area.

5. The information recording medium according to claim 1, wherein said first recording layer further has a space area in which first address

information which indicates an address in the first track path is recorded, which is adjacent to the outer circumferential side of the first test writing area, and in which other information is not recorded.

6. The information recording medium according to claim 1, wherein the first test writing area and the second test writing area are away from each other in a radial direction of said information recording medium as viewed from a normal direction of said information recording medium, or at least an area portion of the first test writing area into which the first test-write information is written and at least an area portion of the second test writing area into which the second test-write information is written are away from each other in the radial direction.

7. An information recording apparatus for recording first information and second information onto an information recording medium in a disc shape, comprising: a first recording layer to record therein the first information along a first track path directed from an inner circumferential side to an outer circumferential side of said information recording medium, by irradiating laser light for recording thereto; and a second recording layer, located on a rear of said first recording layer as viewed from an irradiation side of the laser light, to record therein the second information along a second track path directed from the outer circumferential side to the inner circumferential side of said information recording medium, by irradiating the laser light thereto,

said information recording apparatus comprising:

a writing device for writing the first information into said first

recording layer by irradiating the laser light to focus on said first recording layer and writing the second information into said second recording layer by irradiating the laser light to focus on said second recording layer;

a test-writing control device for controlling said writing device to test-write first test-write information for calibration of the laser light, into said first recording layer as one portion of the first information, and to test-write second test-write information for calibration of the laser light, into said second recording layer as one portion of the second information; and

a recording control device for controlling said writing device (I) to record first record information into said first recording layer, along the first track path as another portion of the first information, on the outer circumferential side of an area in which the first test-write information is test-written, by using the laser light calibrated on the basis of the first test-write information, and (II) to record second record information into said second recording layer, along the second track path as another portion of the second information, on the outer circumferential side of an area in which the second test-write information is test-written, by using the laser light calibrated on the basis of the second test-write information, after the first and second test-write information are test-written by said test-writing control device.

8. The information recording apparatus according to claim 7, wherein

in the first recording area, first address information which indicates addresses sequentially given from the inner circumferential side to the outer circumferential side, is recorded in advance along the first track path,

in the second recording area, second address information which

indicates addresses sequentially given from the outer circumferential side to the inner circumferential side, is recorded in advance along the second track path,

said information recording apparatus further comprises an address reading device for reading the first and second address information, and

said recording control device controls said writing device to (I) record the first record information along the first track path in accordance with the read first address information and (II) to record the second record information along the second track path in accordance with the read second address information.

9. The information recording apparatus according to claim 8, wherein

first recording layer has a space area in which the first address information is recorded, which is adjacent to the outer circumferential side of the first test writing area, and in which other information is not recorded, and

said address reading device reads the first address information by accessing the space area.

10. The information recording apparatus according to claim 7, wherein

said information recording apparatus further comprises an area detecting device for detecting areas in which the first and second test-write information is already test-written, and

said test-writing control device controls said writing device to set a start position at each time of writing the first and second test-write information in accordance with the areas detected by said area detecting device.

11. The information recording apparatus according to claim 7, wherein said test-writing control device controls said writing device to use an area portion of a predetermined size in order of the outer circumferential side to the inner circumferential side in each operation of writing the first test-write information, and controls said writing device to use an area portion of a predetermined size in order of the inner circumferential side to the outer circumferential side in each operation of writing the second test-write information.

12. The information recording apparatus according to claim 7, wherein said recording control device (I) controls said writing device to record first control information for controlling at least one of a recording operation and a reproduction operation of the first record information, on the outer circumferential side of the area in which the first test-write information is test-written and on the inner circumferential side of an area in which the first record information is recorded, in said first recording layer, and (II) controls said writing device to record second control information for controlling at least one of a recording operation and a reproduction operation of the second record information, on the outer circumferential side of the area in which the second test-write information is test-written and on the inner circumferential side of an area in which the second record information is recorded, in said second recording layer.

13. The information recording apparatus according to claim 7, wherein said test-writing control device (I) controls said writing device to use such

areas that the first test writing area and the second test writing area are away from each other in a radial direction of said information recording medium as viewed from a normal direction of said information recording medium, or (II) controls said writing device to use such areas that (II-1) at least an area portion of the first test writing area into which the first test-write information is written and (II-2) at least an area portion of the second test writing area into which the second test-write information is written are away from each other in the radial direction.

14. An information recording method in an information recording apparatus for recording first information and second information onto an information recording medium in a disc shape, comprising: a first recording layer to record therein the first information along a first track path directed from an inner circumferential side to an outer circumferential side of said information recording medium, by irradiating laser light for recording thereto; and a second recording layer, located on a rear of said first recording layer as viewed from an irradiation side of the laser light, to record therein the second information along a second track path directed from the outer circumferential side to the inner circumferential side of said information recording medium, by irradiating the laser light thereto, said information recording apparatus comprising: a writing device for writing the first information into said first recording layer by irradiating the laser light to focus on said first recording layer and writing the second information into said second recording layer by irradiating the laser light to focus on said second recording layer,

said information recording method comprising:

a test-writing control process of controlling said writing device to test-write first test-write information for calibration of the laser light, into said first recording layer as one portion of the first information, and to test-write second test-write information for calibration of the laser light, into said second recording layer as one portion of the second information; and

a recording control process of controlling said writing device (I) to record first record information into said first recording layer, along the first track path as another portion of the first information, on the outer circumferential side of an area in which the first test-write information is test-written, by using the laser light calibrated on the basis of the first test-write information, and (II) to record second record information into said second recording layer, along the second track path as another portion of the second information, on the outer circumferential side of an area in which the second test-write information is test-written, by using the laser light calibrated on the basis of the second test-write information, after the first and second test-write information are test-written by said test-writing control process.